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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/508,322 03/09/00 HOLME

J 22815USA

EXAMINER

IM62/0221

CHARLES H LINDROOTH
SYNNESTVEDT & LECHNER
1101 MARKET STREET
SUITE 2600
PHILADLPHIA PA 19107-2950

MILKINS III, H

ART UNIT

PAPER NUMBER

1742

DATE MAILED:

02/21/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/508,322

Applicant(s)

HOLME, JOHN DAVID

Examiner

Harry D Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-4 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Akiyama et al (JP 02138438 A).

Akiyama et al anticipate the claimed disc brake rotor made of gray cast iron.

Akiyama et al teach (see abstract) that the composition contains 0.5 to 1.2 wt% copper and contains “carbide forming metals” including titanium, vanadium, molybdenum, and chromium. These metals are contained at an amount that can satisfy that the ratio of copper to the carbide forming metals is between 1.8 and 3.0.

Regarding claim 2, Akiyama et al teach that the composition includes chromium and molybdenum.

Regarding claim 3, Akiyama et al teach that the amount of vanadium contained can be less than half the content of copper plus twenty times the content of titanium.

Regarding claim 4, Akiyama et al teach that the composition includes 3.5 to 4.0 wt% carbon, 1.4 to 2.0 wt% silicon and no phosphorous which means that the carbon equivalents are 3.967 to 4.667 which overlap the claimed range. The standard

definition of carbon equivalents in cast irons is the carbon content plus one-third of the silicon content plus one-sixth of the phosphorous content.

Regarding claim 6, Akiyama et al teach that the composition can include vanadium at 0.35 wt%.

Regarding claim 7, Akiyama et al teach that copper can be included in the range of 0.7 to 0.9 wt%.

Regarding claim 8, Akiyama et al teach that the amount of vanadium contained can be less than half the content of copper plus twenty times the content of titanium while including the additional carbide forming metals chromium and molybdenum.

3. Claims 1-4 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Escher Wyss Aktiengesellschaft (GB 1,085,715).

Escher Wyss Aktiengesellschaft (EWA) anticipate the claimed vehicle brake part made of gray cast iron. The composition contains (see line 23 to line 37) 0.5 to 1.2 wt% copper and contains "carbide forming metals" including titanium, vanadium, molybdenum, and chromium. These metals are contained at an amount that can satisfy that the ratio of copper to the carbide forming metals is between 1.8 and 3.0.

Regarding claim 2, EWA teaches that the composition includes chromium and molybdenum.

Regarding claim 3, EWA teaches that the amount of vanadium contained can be less than half the content of copper plus twenty times the content of titanium.

Regarding claim 4, EWA teaches that the composition includes 2.8 to 3.5 wt% carbon, about 2.3 wt% silicon (see page line 24) and 0.6 to 1.5 phosphorous which

means that the carbon equivalents are 3.6667 to 4.5167 which overlap the claimed range.

Regarding claim 6, EWA teaches that the composition can include vanadium at 0.35 to 0.45 wt%.

Regarding claim 7, EWA teaches that copper can be included in the range of 0.7 to 0.9 wt%.

Regarding claim 8, EWA teaches that the amount of vanadium contained can be less than half the content of copper plus twenty times the content of titanium while including the additional carbide forming metals chromium and molybdenum.

4. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Lawrence et al (5,948,353).

Lawrence et al anticipate the claimed disc brake rotor made of gray cast iron. Lawrence et al teach (see col 1 line 57 to col 2 line 5) that the composition contains 0.5 to 1.0 wt% copper and contains "carbide forming metals" including titanium and vanadium. These metals are contained at an amount that can satisfy that the ratio of copper to the carbide forming metals is between 1.8 and 3.0.

Regarding claim 2, Lawrence et al teach that the composition also includes chromium and molybdenum.

Regarding claim 3, it is inherent that the Lawrence et al teaching can contain vanadium at an amount that can be less than half the content of copper plus twenty times the content of titanium.

Regarding claim 4, Lawrence et al teach that the composition includes more than

3.40 wt% carbon, 1.0 to 2.5 wt% silicon and less than 0.15 wt% phosphorous which means that the carbon equivalents have a minimum of 3.733 which overlaps the claimed range.

Regarding claim 5, Lawrence et al teach that the composition can include titanium at 0.025 to 0.035 wt%.

Regarding claim 6, Lawrence et al teach that the composition can include vanadium at 0.35 to 0.45 wt%.

Regarding claim 7, Lawrence et al teach that copper can be included in the range of 0.7 to 0.9 wt%.

Regarding claim 8, it is inherent that the Lawrence et al teaching can contain vanadium at an amount that can be less than half the content of copper plus twenty times the content of titanium while including the additional carbide forming metals chromium and molybdenum.

The effective filing date of Lawrence et al is based upon the provisional application which contains all of the specifications relied upon in this rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen (GB 737,510) in view of Akiyama et al (JP 02138438) or Lawrence et al (5,948,353).

Madsen teaches a gray cast iron for use in piston rings in internal combustion engines. The composition includes (see line 59 to line 72) vanadium in an amount between 0.15 to 0.45 wt%, with copper being present at 3 to 5 times this amount, i.e. 0.45 to 2.25 wt% and titanium in an amount that is 1/6 to 1/2 the amount of vanadium, i.e. 0.025 to 0.225. This range can satisfy the copper to carbide forming metals ratio requirement.

Madsen does not teach that the gray cast iron can be used for a disc brake rotor.

Akiyama et al teach (see title and abstract) a similar gray cast iron composition that is used to create rotors for disc brakes. Lawrence et al teach (see title and abstract) a similar gray cast iron composition that is used to create rotors for disc brakes.

Therefore, it would have been obvious to one of ordinary skill in the art to use the cast iron of Madsen for making a disc brake rotor because it has a low wearing characteristic and increased strength values (see page 2, lines 5-10) which are desirable for use in a disc brake rotor and because it is well known in the art to use gray cast irons for disc brake rotors as evidenced by Akiyama et al or Lawrence et al.

Regarding claim 3, Madsen teaches that vanadium must be present at less than half the amount of copper because the copper content must be at least three times the amount of the vanadium.

Regarding claim 4, Madsen teaches that carbon is contained at an amount between 2.5 to 3.9 wt%, 0.8 to 3.0 wt% silicon and 0.025 to 0.1 wt% phosphorous which means that the carbon equivalents are 2.7917 to 5.0000 which overlap the claimed range.

Regarding claim 5, Madsen teaches that titanium can be contained at 0.025 to 0.035 wt%.

Regarding claim 6, Madsen teaches that vanadium can be contained at 0.35 to 0.45wt%.

Regarding claim 7, Madsen teaches that copper can be contained at 0.7 to 0.9 wt%.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-F 8:15am-4:45pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
February 15, 2001

R-11
ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700